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March 27, 2019

Stephen Ball, Task Monitor
U.S. Environmental Protection Agency
950 West Bannock Street, Suite 900, Mail Stop: IOO
Boise, Idaho 83702

Re: *DRAFT US Ecology Waste Disposal Facility Explosion Trip Report*,
Contract Number: EP-S7-13-07,
Task Order Number: TO-520-002

Dear Mr. Ball:

Enclosed please find the Draft Trip Report for the US Ecology Waste Disposal Facility Explosion, which is located in Grand View, Idaho. If you have any questions regarding this submittal, please call me at (206) 624-9537.

Sincerely,
ECOLOGY AND ENVIRONMENT, INC.

David Burford
START-IV Team Leader

cc: Renee Nordeen, Project Manager, E & E, Seattle, Washington

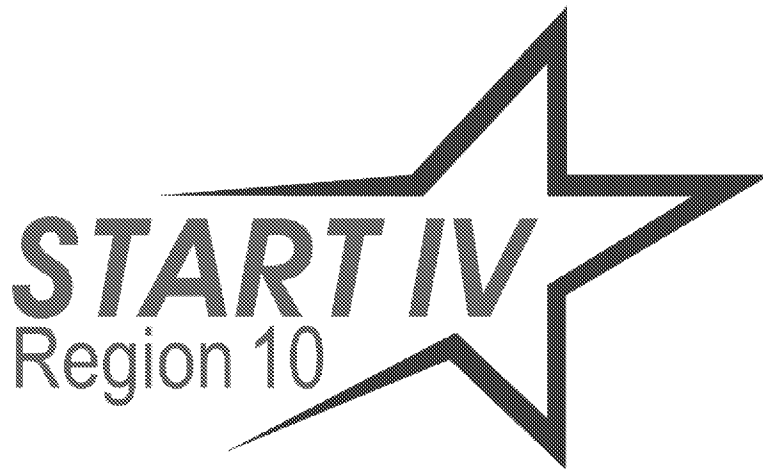
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TRIP REPORT

US Ecology Waste Disposal Facility Explosion

Grand View, Idaho

TASK ORDER: TO-520-002



Prepared for

U.S. Environmental Protection Agency, Region 10
950 West Bannock Street, Suite 950
Boise, Idaho 83702

Prepared by

Ecology and Environment, Inc.
720 Third Avenue, Suite 1700
Seattle, Washington 98104

March 2019

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1. PLACE VISITED

Site Name:	US Ecology Waste Disposal Facility Explosion
Property Owner Name:	US Ecology Idaho, Inc.
Location:	20400 Lemley Road Grand View, Idaho 83624
SSID:	10ZZ
EPA ID:	IDN001020075
Latitude, Longitude:	42.0654012, -116.2640888
Date(s) of Trip:	November 18– 21, 2018

2. PURPOSE

The U.S. Environmental Protection Agency (EPA) has tasked Ecology and Environment, Inc. (E & E), under Superfund Technical Assessment and Response Team (START) contract number EP-S7-13-07, Task Order TO-520-002 to support EPA during an emergency response to a magnesium explosion at the US Ecology Idaho, Inc. (US Ecology) facility, located in Grand View, Owyhee County, Idaho (Figure 1). The purpose of the US Ecology Waste Disposal Facility Explosion site emergency response was to:

- Conduct air monitoring for worker and observer health and safety;
- Conduct an inventory of containers impacted by the explosion associated with the Stabilization and Containment Buildings; and
- Collect photographic documentation of site activities.

Following the document are two attachments in association with the tasks outlined above, including:

- Photographic documentation (Attachment A); and
- Drum Inventory (Attachment B).

3. PERSONS INVOLVED

Agency/Company	Contact Persons/ Position	Phone Number
EPA	Stephen Ball, Federal On-Scene Coordinator (OSC)	(208) 378-6510
START	Renee Nordeen, Project Manager	(206) 624-9537
	David Burford, Data Manager	

4. BACKGROUND AND SITE DESCRIPTION

The site is a Subtitle C hazardous waste disposal facility that is primarily engaged in the management and disposal of inorganic hazardous waste. The site is located in a remote area of Owyhee County, approximately 10 miles south of Grand View, Idaho, and approximately 50 miles south of Boise, Idaho (Figure 1).

At approximately 0915 Mountain Standard Time on November 17, 2018, an explosion occurred at the site. The explosion took place in the Stabilization building, which is used to process magnesium powder fines waste. It was estimated that approximately 7,000 pounds of magnesium waste was present in the Stabilization building at the time of the explosion. The cause of the explosion is currently under investigation by both the company and the Occupational Safety and Health Administration.

There were 21 employees at the site at the time of the explosion. Three workers from the facility were injured in the explosion and one fatality occurred. The Stabilization and Containment buildings were significantly damaged and the explosion caused some damage to surrounding buildings. There was an initial fire resulting from the explosion; however, the fire burned out by the evening of November 17.

Responding firefighters did not use water to fight the fire and took up defensive positions due to the nature of the fire. The fire was limited to the building footprint. It was described as smoldering after the initial explosion and did not spread. Damage from the explosion compromised US Ecology's ability to immediately access and provide definitive information on the chemical contents of all surrounding structures. The Regional Response HazMat team conducted air monitoring during the day of November 17 using a 5-gas meter and observed no releases. Due to these results, the responders were not initially concerned about impacts to off-site air quality.

After consultation with other state stakeholders, EPA deployed to the site on November 18. US Ecology began response activities on November 17 after control of the site was released from the Owyhee County Sheriff.

Once the site was released to US Ecology, assessment teams conducted visual surveys of the impacted buildings and all waste container storage areas. It was determined that perimeter buildings and pads, used to store hazardous waste, were damaged in some cases. Some of the waste containers on the pads and in the buildings had compromised integrity. Areas of concern identified from the assessment effort included the Containment and Stabilization buildings footprints and the concrete and gravel apron in front of the building complex (Figure 2). Some minor discharges in a few containers were noted and measures were taken, if safe, to address. In other cases, discharges were controlled by containment structures and not expected to migrate laterally or into the subsurface.

5. FIELD ACTIVITIES

EPA mobilized to the site on November 18 and established Unified Command with US Ecology personnel. START mobilized to the site on November 19 and work was concluded on November 21. EPA activities at the site can be categorized into the following functional areas:

- Mobilization, Site Set-up, and Initial Reconnaissance;
- Removal and Drum Staging Oversight;
- Contaminant Monitoring; and
- Demobilization.

5.1 Mobilization, Site Set-up, and Initial Reconnaissance

Based on the information gathered during the assessment survey, Unified Command designated the following priorities:

- Secure the magnesium fines drums located on the apron of the Stabilization building;
- Secure all other waste streams located on the apron; and
- If allowable by a structural engineer, enter the Stabilization and Containment buildings and assess flammable and acidic waste streams inside the building to determine if further immediate action is required.

Upon arrival at the site, a safety briefing and tour of the impacted area was conducted. Contractors for US Ecology established work zones around the perimeter of the Stabilization and Containment buildings (Figure 2). The exclusion zone was around the immediate perimeter of the building with a contamination reduction zone extended approximately 60 to 80 feet further from the exclusion zone. The support zone was established outside of the contamination reduction zone and was where START work was primarily conducted. The command post was established near the entrance in temporary work trailers.

5.2 Removal and Drum Staging Oversight

On November 19, US Ecology contractor personnel moved debris from the impacted area in order to access the drums and containers on the apron of the Stabilization and Containment buildings, with care being taken to preserve the scene as much as practical for the future investigation to determine the cause of the explosion. No vehicles that were impacted in the explosion were moved as part of the operations. The magnesium fines drums (Drum Group 4) were moved from the exclusion zone by placing the drum onto a pallet and moved with a skid steer to the overpack area where an excavator was utilized to pick the drum up and place it in a 85-gallon overpack drum. Prior to moving the drums, each drum was measured with a temperature gun to ensure the contents were stable enough to overpack. The temperature of one drum was elevated and this drum was segregated and overpacked after the temperature of the drum was stabilized. These drums were then segregated as either “damaged” or “undamaged.” At the conclusion of November 19, a total of 16 drums (10 damaged and 6 undamaged) had been overpacked and moved to the staging area.

Moving and staging of drums continued on November 20. The moving, overpacking, and staging of the magnesium fines drums were completed on November 20 for a total of 89 drums (77 damaged and 12 undamaged) drums. After the drums from Drum Group 4 were processed, the US Ecology contractor began moving the magnesium waste and shavings drums (Drum Group 5). Initially, it was thought that these drums also contained magnesium fines and the drums were planned to be overpacked as well. Upon moving the drums, it was determined the contents were not magnesium fines but waste and floor shavings from processing the material. Operations were halted at approximately 0900 to allow Idaho Power to access the area, remove a piece of metal that had been suspended on a power line from the explosion, and re-energize the lines in the work area.

Following an inspection by a structural engineer, it was determined that the Stabilization and Containment buildings were safe to enter. US Ecology’s contractors and US Ecology personnel entered the Containment building and covered exposed containers and totes with visqueen to prevent them from potentially being impacted by incoming weather systems. In addition, US Ecology collected sample material from the two vaults in the Stabilization building to assist in the on-going investigation of the nature of the explosion.

All of the drums, totes, and containers were moved to designated staging areas at the conclusion of the day. The container inventory is provided in Attachment B.

5.3 Contaminant Monitoring

START conducted air monitoring at one station (AS01) on November 19 and two stations on November 20 (AS01 and AS02). The particulate monitors evaluated the dust that was generated when US Ecology’s subcontractor was moving debris and the drums for staging. The Occupational Health and Safety Administration has established an action level of 15 milligrams per cubic meter time-weighted average. The average results were below this action level. A summary of the results are provided in Table 1.

Table 1 Total Particulate Readings			
Location	Average (mg/m ³)	Minimum (mg/m ³)	Maximum (mg/m ³)
AS01	0.177	0.014	19.5
AS02	0.124	0.002	6.88

mg/m³ = milligrams per cubic meter

5.4 Demobilization

Prior to demobilization, EPA provided US Ecology with a list of activities to complete, which included:

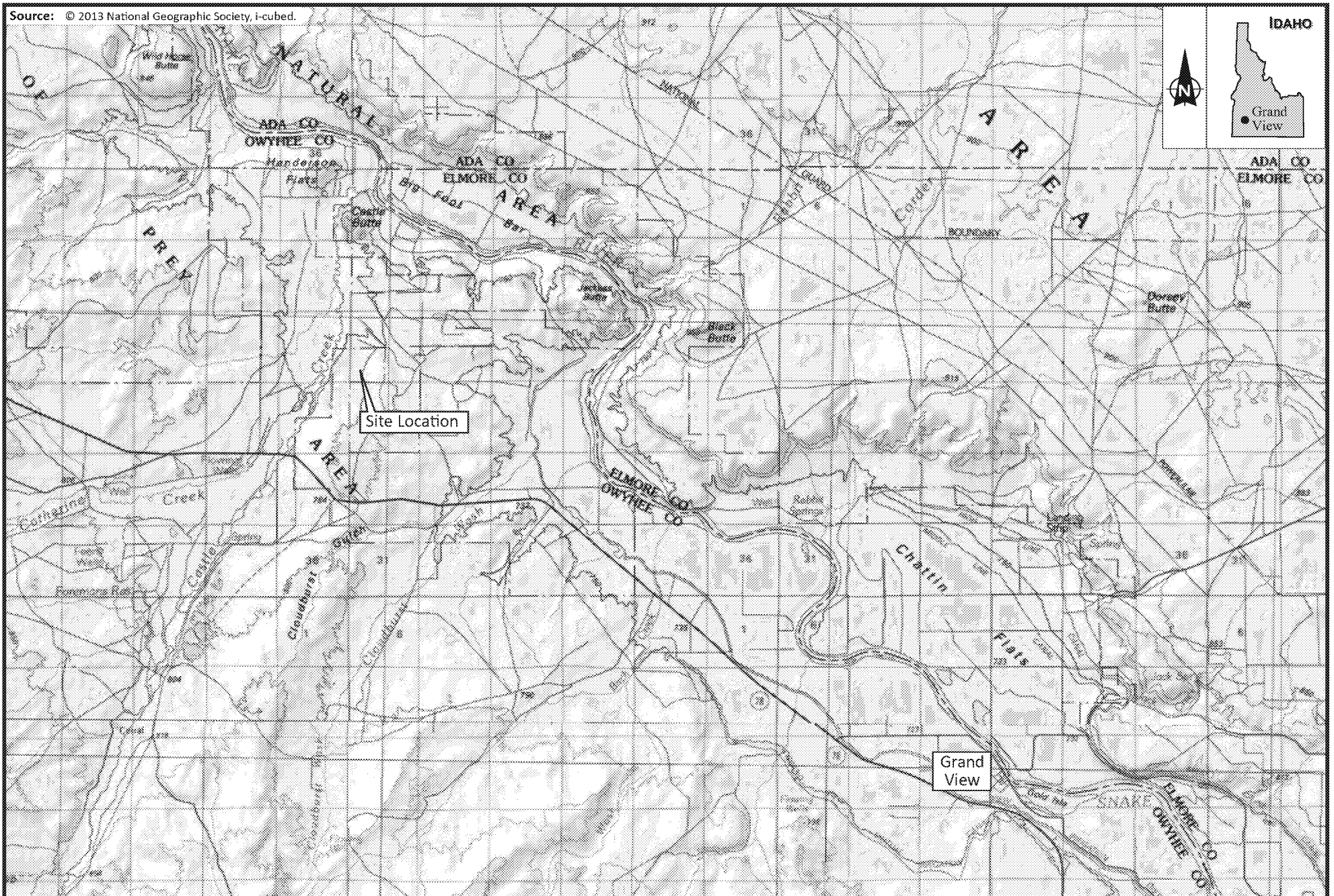
- Daily e-mail to the EPA of significant activities at the site;
- Status update to the EPA of the site following the first significant rain event; and
- Notification to the EPA of any changes in site stability.

EPA and START demobilized from the site on November 21 and no further work by EPA or START is anticipated.

6. SUMMARY AND CONCLUSIONS

On November 17, 2018, a severe explosion at the US Ecology Subtitle C hazardous waste facility near Grand View, Idaho, resulted in one fatality and impacted numerous containers in and on the apron of the Stabilization and Containment buildings. EPA and START mobilized to the site to conduct oversight of US Ecology activities with respect to stabilizing the damaged containers. START conducted an inventory of the containers, conducted air monitoring for worker health and safety, and collected general site information. At the conclusion of work activities on November 20, all accessible containers and totes inside the Containment building had been covered with visqueen to prevent them from potentially being impacted by incoming weather systems and all containers on the apron outside the Containment and Stabilization buildings had been segregated away from the building awaiting final disposal. The magnesium drums located outside the Containment building had been overpacked and segregated based on the status (damaged or undamaged) of the original drum awaiting final disposition. EPA and START demobilized from the site November 21, 2018. No further work by EPA or START is anticipated.

Source: © 2013 National Geographic Society, i-cubed.



ecology and environment, inc.
Global Environmental Specialists
Seattle, Washington

GRAND VIEW MAGNESIUM POWDER EXPLOSION Grand View, Idaho

0 1 2
Approximate Scale in Miles

Figure 1
SITE VICINITY MAP

Date:	Drawn by:
1/3/19	AES

10:START IV\TO-0520-002\fig 1

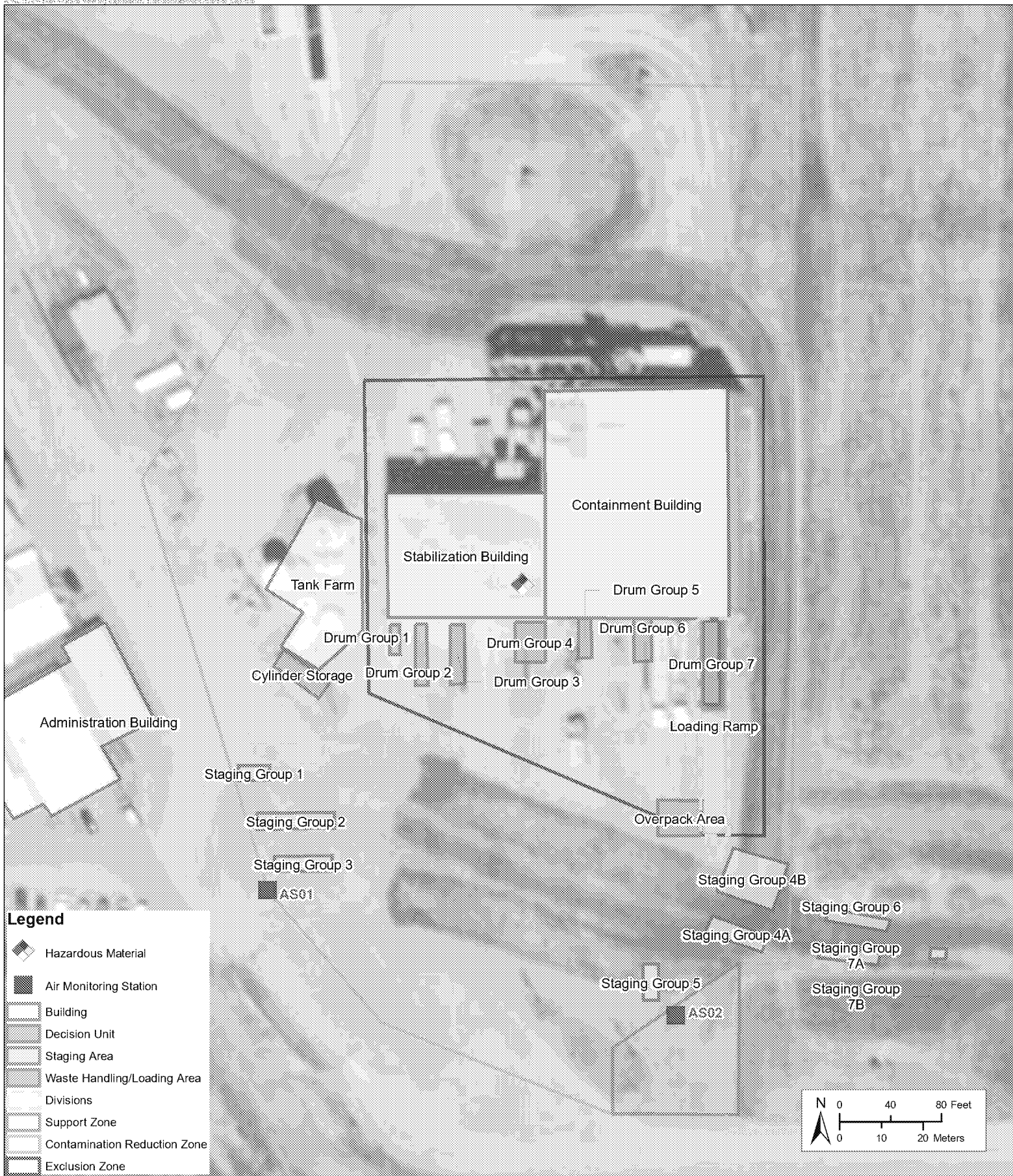


Figure 2
SITE MAP
US ECOLOGY WASTE DISPOSAL FACILITY EXPLOSION
 Grand View, Idaho

Date: 1/28/2019

ATTACHMENT A
Photographic Documentation

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US ECOLOGY WASTE DISPOSAL FACILITY EXPLOSION

Grand View, Idaho



Photo 1 Observation Area in front of Stabilization and Containment buildings.

Direction: North Date: 11/19/18 Time: 15:09 Taken by: RN



Photo 3 Damage to Pad 6 - RCRA/PCB Storage building.

Direction: Northeast Date: 11/19/18 Time: 15:14 Taken by: RN

TO Subtask Number: TO-0520-002

Photographed by: Renee Nordeen (RD), David Burford (DB)



Photo 2 Damage to Stabilization and Containment buildings.

Direction: North Date: 11/19/18 Time: 15:13 Taken by: RN



Photo 4 Damage to Administrations buildings from explosion.

Direction: Northwest Date: 11/19/18 Time: 15:15 Taken by: RN

US ECOLOGY WASTE DISPOSAL FACILITY EXPLOSION

Grand View, Idaho



Photo 5 PRP Contractors in the Exclusion Zone preparing to move magnesium fines drums.

Direction: North Date: 11/19/18 Time: 15:28 Taken by: RN



Photo 7 Preparing to overpack the drums from Drum Group 4.

Direction: North Date: 11/19/18 Time: 16:39 Taken by: RN

TO Subtask Number: TO-0520-002

Photographed by: Renee Nordeen (RD), David Burford (DB)



Photo 6 Monitoring location AS01.

Direction: Southeast Date: 11/19/18 Time: 15:52 Taken by: RN



Photo 8 Close view of magnesium fines overpack labeling.

Direction: Down Date: 11/19/18 Time: 16:46 Taken by: RN

US ECOLOGY WASTE DISPOSAL FACILITY EXPLOSION

Grand View, Idaho



Photo 9 Staged magnesium fines drums from Drum Group 4.

Direction: East Date: 11/19/18 Time: 17:16 Taken by: RN



Photo 11 Flammable drums and solid waste totes in Containment Building.

Direction: West Date: 11/20/18 Time: 15:16 Taken by: DB

TO Subtask Number: TO-0520-002

Photographed by: Renee Nordeen (RD), David Burford (DB)



Photo 10 Containers and totes inside Containment Building.

Direction: West Date: 11/20/18 Time: 15:15 Taken by: DB

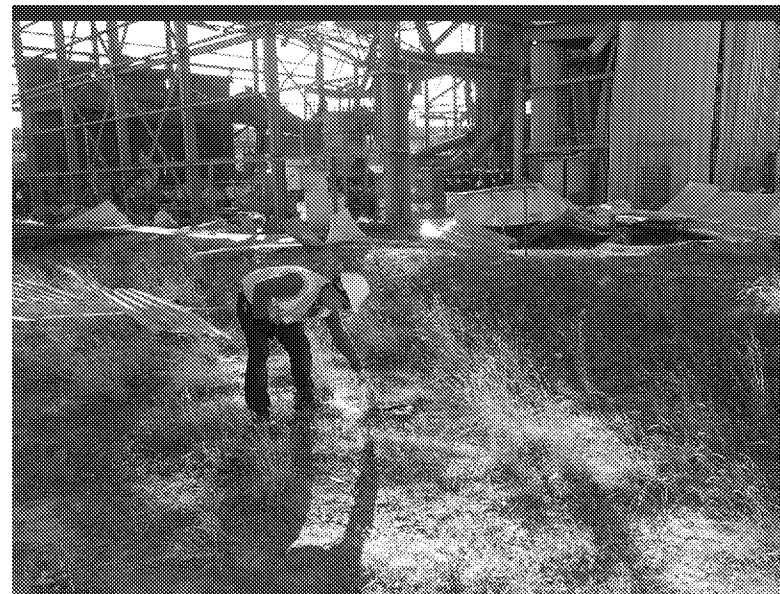


Photo 12 Drum lid on the northeast side of the Containment Building.

Direction: Southwest Date: 11/20/18 Time: 15:18 Taken by: DB

US ECOLOGY WASTE DISPOSAL FACILITY EXPLOSION

Grand View, Idaho



Photo 13 Close view of damage to Pad 6 building.

Direction: North Date: 11/20/18 Time: 15:21 Taken by: DB



Photo 15 Drums in Drum Group 1 and 2.

Direction: Northeast Date: 11/20/18 Time: 15:25 Taken by: DB

TO Subtask Number: TO-0520-002

Photographed by: Renee Nordeen (RD), David Burford (DB)



Photo 14 Cylinder Storage Area adjacent to Stabilization building.

Direction: Northeast Date: 11/20/18 Time: 15:24 Taken by: DB



Photo 16 Magnesium waste and shavings drums from Drum Group 5.

Direction: North Date: 11/20/18 Time: 15:54 Taken by: DB

US ECOLOGY WASTE DISPOSAL FACILITY EXPLOSION

Grand View, Idaho



Photo 17 Segregated drums from Drum Group 1 and 2.

Direction: Northeast Date: 11/20/18 Time: 16:18 Taken by: DB



Photo 19 Damaged drums from Drum Group 6.

Direction: West Date: 11/20/18 Time: 16:47 Taken by: DB

TO Subtask Number: TO-0520-002

Photographed by: Renee Nordeen (RD), David Burford (DB)



Photo 18 Drums from Drum Group 3 in foreground.

Direction: Northeast Date: 11/20/18 Time: 16:29 Taken by: DB



Photo 20 Drums and totes from Drum Group 7.

Direction: Southeast Date: 11/20/18 Time: 17:32 Taken by: RN

US ECOLOGY WASTE DISPOSAL FACILITY EXPLOSION

Grand View, Idaho



Photo 21 PRP representatives collecting samples inside the Containment building.

Direction: North Date: 11/21/18 Time: 11:59 Taken by: RN



Photo 23 Damaged equipment and vehicles inside Stabilization building.

Direction: North Date: 11/21/18 Time: 12:09 Taken by:

TO Subtask Number: TO-0520-002

Photographed by: Renee Nordeen (RD), David Burford (DB)



Photo 22 PRP representatives covering containers and totes inside the Containment building.

Direction: East Date: 11/21/18 Time: 12:03 Taken by: RN

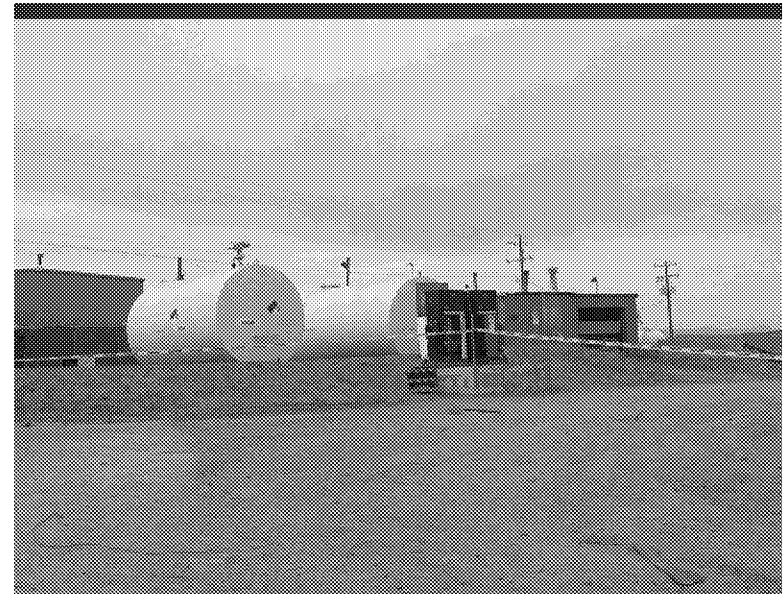


Photo 24 Undamaged tanks in tank farm adjacent to Stabilization Building.

Direction: Northwest Date: 11/21/18 Time: 12:10 Taken by: RN

ATTACHMENT B
Container Inventory

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Attachment B Container Inventory	
Drum Group	Description of Contents
Drum Group 1 – Caustics and Amines	<ul style="list-style-type: none"> ▪ 1 x 55-gallon drum without a lid full of solid debris ▪ 3 x 55-gallon undamaged drums full of solid debris ▪ 1 x 250-gallon tote
Drum Group 2 – Caustics and Amines	<ul style="list-style-type: none"> ▪ 25 x 55-gallon undamaged drums ▪ 2 x 55-gallon drums without lids full of solid debris ▪ 13 x 35-gallon drums ▪ 43 x 5-gallon totes ▪ 8 boxes (4 each box) 1-gallon bottles
Drum Group 3 – Sandblast Media	<ul style="list-style-type: none"> ▪ 3 x 55-gallon drums without lids ▪ 36 x 55-gallon undamaged drums
Drum Group 4 – Magnesium Fines	<ul style="list-style-type: none"> ▪ 77 x 35-gallon damaged drums ▪ 12 x 35-gallon undamaged drums ▪ All drums in this group were overpacked prior to being moved to the staging area.
Drum Group 5 – Magnesium Waste and Shavings	<ul style="list-style-type: none"> ▪ 13 x 35-gallon undamaged drums ▪ 2 x 35-gallon partially crushed drums ▪ Drums were banded together on three pallets with five drums each
Drums Group 6 – Corrosives	<ul style="list-style-type: none"> ▪ 8 x 55-gallon undamaged drums ▪ 5 x 55-gallon drums with damaged lids
Drum Group 7 – Miscellaneous Acids, Corrosives, and Solid Waste	<ul style="list-style-type: none"> ▪ 16 x 55-gallon undamaged drums ▪ 1 x 55-gallon crushed drum (overpacked after being moved to the staging area) ▪ 2 x 55-gallon undamaged poly drums ▪ 5 x 250-gallon totes ▪ 1 x 55-gallon acid drum (segregated in the staging area)

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